Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): In a communications system employing a plurality of rate matching stages for processing a plurality of individual parity bit streams derived through puncturing a selected number of bits, a method of avoiding problematic Turbo code puncturing patterns, the method comprising:

(a) determining whether or not a desired code rate, used to process the parity bit streams, results in a problematic puncturing pattern; ~~and~~

(b) if a problematic puncturing pattern results in step (a), adjusting the number of bits punctured in each of the parity bit streams by increasing the number of bits punctured in one of the parity bit streams and decreasing the number of bits punctured in another one of the parity bit streams;

(c) determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(d) if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$, calculating the bias

$$\Delta = \left\lceil \left| \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right| \right\rceil ; \text{ and}$$

(e) setting $\Delta = 0$ if $\left|\frac{I}{(P/2)} - \frac{7\hat{N}}{2}\right|$ *is not* $< 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

2. (previously amended): The method of claim 1 wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, and step (b) further comprises:

(b1) adding punctured bits to the first group of P1 bits; and

(b2) removing punctured bits from the second group of P2 bits, wherein the puncturing rates of the P1 and P2 bits are biased by adding a number of non-punctured P1 bits to the first group and decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 3 (canceled)

4. (currently amended): The method of claim 2 ~~claim 3~~, wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

5. (currently amended): The method of claim 4 wherein the non-puncturing patterns ~~periods~~ will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.

6. (currently amended): In a communications system employing a plurality of rate matching stages for processing a plurality of individual parity bit

streams derived through puncturing a selected number of bits, a method of avoiding problematic Turbo code puncturing patterns, the method comprising:

(a) adjusting the number of bits punctured in each of the parity bit streams by increasing the number of bits punctured in one of the parity bit streams and decreasing the number of bits punctured in another one of the parity bit streams; ~~and~~

(b) adjusting the puncturing rates of each of the parity bit streams while maintaining a constant overall effective coding rate by biasing the puncturing rates;

(c) determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(d) if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$, calculating the bias

$$\Delta = \left\lceil \left| \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right| \right\rceil ; \text{ and}$$

(e) setting $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right|$ *is not* $< 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

7. (previously amended): The method of claim 6 wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, step (a) further comprises:

(a1) adding punctured bits to the first group of P1 bits; and

(a2) removing punctured bits from the second group of P2 bits; and step (b) further comprises:

(b1) biasing the puncturing rates of the P1 and P2 bits by adding a number of non-punctured P1 bits to the first group and decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 8 (canceled)

9. (currently amended): The method of claim 7 ~~claim 8~~, wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

10. (currently amended): The method of claim 9 wherein the non-puncturing patterns ~~periods~~ will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.

11. (currently amended): A method of identifying degradations in quality of punctured error correction coded transmissions, the method comprising:

(a) identifying a puncturing pattern which approximates a particular code rate; and

(b) adjusting a value for anticipated degradation in accordance with the matching of the puncturing pattern and the particular code rate by increasing and decreasing the number of bits punctured in respective parity bit streams, and biasing the particular code rate, wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, and step (b) further comprises:

(b1) adding punctured bits to the first group of P1 bits;

(b2) removing punctured bits from the second group of P2 bits; and

(b3) biasing the puncturing rates of the P1 and P2 bits to avoid problematic puncturing patterns by:

(i) adding a number of non-punctured P1 bits to the first group; and

(ii) decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 12 (canceled)

13. (currently amended): The method of claim 11 ~~claim 12~~ further comprising:

(c) determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(d) if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$, calculating the bias

$$\Delta = \left\lceil \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right\rceil$$; and

(e) setting $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right|$ *is not* $< 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$

~~(c) determining a number of bits~~ $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ ~~wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching; and~~

~~(d) if~~ $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 + \frac{\hat{N}}{2} - \left\lfloor \frac{\hat{N}}{2} \right\rfloor$, ~~calculate the bias~~

$$\Delta = \left\lceil \left| \max\left\{ \left(\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor - \frac{P}{2}, \frac{P}{2} - \left\lceil \frac{7\hat{N}+1}{2} \right\rceil \right) \right\} \right| \right\rceil$$ ~~, otherwise set $\Delta = 0$~~.

14. (original): The method of claim 11 further comprising:

(c) using Turbo code to implement the error correction coded transmissions.

15. (original): The method of claim 14 further comprising:

(d) identifying when a non-punctured bit pattern of the transmissions exhibits a periodic characteristic, with a period equal to a period of a semi-periodic impulse response of recursive encoding blocks of the Turbo code; and

(e) using the identified non-punctured bit patterns which exhibit a periodic characteristic to identify puncturing patterns with degraded performance.

16. (currently amended): A method of identifying degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits, the method comprising:

(a) adding punctured bits to the first group of P1 bits;

(b) removing punctured bits from the second group of P2 bits; ~~and~~

(c) biasing the puncturing rates of the P1 and P2 bits to avoid problematic puncturing patterns by:

(i) adding a number of non-punctured P1 bits to the first group; and

(ii) decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group;

(d) determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(e) if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$, calculating the bias

$$\Delta = \left\lceil \left| \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right| \right\rceil$$; and

(f) setting $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right|$ *is not* $< 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

17. (currently amended): The method of claim 16 further comprising:

(g) ~~(d)~~ using Turbo code to implement the error correction coded transmissions.

18. (currently amended): The method of claim 17 further comprising:

(h) ~~(e)~~ identifying when a non-punctured bit pattern of the transmissions exhibits a periodic characteristic, with a period equal to a period of a semi-periodic impulse response of recursive encoding blocks of the Turbo code; and

(i) ~~(f)~~ using the identified non-punctured bit patterns which exhibit a periodic characteristic to identify puncturing patterns with degraded performance.

Claims 19-24 (canceled)

25. (currently amended): A communications system for avoiding problematic Turbo code puncturing patterns, the system comprising:

(a) a plurality of rate matching stages for processing a plurality of individual parity bit streams;

(b) means for adjusting the number of bits punctured in each stage of rate matching; ~~and~~

(c) means for adjusting the number of bits punctured in each of the plurality of parity bit streams by increasing the number of bits punctured in one of the parity bit streams and decreasing the number of bits punctured in another one of the parity bit streams, and biasing the puncturing rate of a problematic puncturing pattern;

(d) means for determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(e) means for calculating the bias $\Delta = \left\lceil \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right\rceil$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$; and

(f) means for setting bias $\Delta = 0$ if $\left|\frac{I}{(P/2)} - \frac{7\hat{N}}{2}\right| \geq 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

26. (previously amended): The system of claim 25 wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, the means for adjusting the number of bits punctured in each of the plurality of parity bit streams further comprising:

(c1) means for adding punctured bits to the first group of P1 bits;

(c2) means for removing punctured bits from the second group of P2 bits; and

(c3) means for biasing the puncturing rates of the P1 and P2 bits to avoid problematic puncturing patterns, the biasing means including:

(i) means for adding a number of non-punctured P1 bits to the first group; and

(ii) means for decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 27 (canceled)

28. (currently amended): The system of claim 26 ~~claim 27~~, wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

29. (currently amended): The system of claim 28 wherein the non-puncturing patterns ~~periods~~ will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.

30. (currently amended): A communications system for avoiding problematic Turbo code puncturing patterns, the system comprising:

(a) a plurality of rate matching stages for processing a plurality of individual parity bit streams;

(b) means for adjusting the number of punctured bits in each of the parity bit streams by increasing the number of bits punctured in one of the parity bit streams and decreasing the number of bits punctured in another one of the parity bit streams; ~~and~~

(c) means for biasing the puncturing rates of each of the individual parity bit streams while maintaining a constant overall effective coding rate;

(d) means for determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(e) means for calculating the bias $\Delta = \left\lceil \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right\rceil$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$; and

(f) means for setting bias $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| \geq 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

31. (previously amended): The system of claim 30 wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, wherein the means for adjusting the number of punctured bits comprises:

(b1) means for adding punctured bits to the first group of P1 bits; and

(b2) means for removing punctured bits from the second group of P2 bits; and the means for biasing the puncturing rates comprises:

(c1) means for biasing the puncturing rates of the P1 and P2 bits to avoid problematic puncturing patterns, the biasing means including:

(i) means for adding a number of non-punctured P1 bits to the first group; and

(ii) means for decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 32 (canceled)

33. (currently amended): The system of claim 31 ~~claim 32~~, wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

34. (currently amended): The system of claim 33 wherein the non-puncturing patterns ~~periods~~ will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.

35. (currently amended): A communications system for identifying degradations in quality of punctured error correction coded transmissions, the system comprising:

(a) means for identifying a puncturing pattern which approximates a particular code rate; ~~and~~

(b) means for adjusting a value for anticipated degradation in accordance with the matching of the puncturing pattern and the particular code rate by increasing and decreasing the number of bits punctured in respective parity bit streams, and biasing the puncturing rate of a problematic puncturing pattern;

(c) means for determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching;

(d) means for calculating the bias $\Delta = \left\lceil \left| \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right| \right\rceil$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$; and

(e) means for setting bias $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| \geq 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

36. (previously amended): The system of claim 35 wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, the means for adjusting a value for anticipated degradation further comprising:

(b1) means for adding punctured bits to the first group of P1 bits;

(b2) means for removing punctured bits from the second group of P2 bits;

and

(b3) means for biasing the puncturing rates of the P1 and P2 bits to avoid problematic puncturing patterns, the biasing means including:

(i) means for adding a number of non-punctured P1 bits to the first group; and

(ii) means for decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group.

Claim 37 (canceled)

38. (currently amended): The system of claim 35 further comprising:

(f) ~~(e)~~ means for using Turbo code to implement the error correction coded transmissions.

39. (currently amended): The system of claim 38 further comprising:

(g) ~~(d)~~ means for identifying when a non-punctured bit pattern of the transmissions exhibits a periodic characteristic, with a period equal to a period of a semi-periodic impulse response of recursive encoding blocks of the Turbo code; and

(h) ~~(e)~~ means for using the identified non-punctured bit patterns which exhibit a periodic characteristic to identify puncturing patterns with degraded performance.

Claims 40-42 (canceled)

43. (currently amended): A communications system for reducing degradations in quality of punctured error corrected code transmissions, the system comprising:

(a) means for identifying a puncturing pattern which approximates a particular code rate; ~~and~~

(b) means for adjusting the parameters of the transmissions sufficiently to cause a mismatch in the puncturing pattern and the particular code rate by increasing and decreasing the number of bits punctured in respective parity bit streams, and biasing the particular code rate;

(c) means for determining a capacity of a wireless transmit and receive unit (WTRU), including buffer sizes that are supported by the WTRU;

(d) means for using puncturing to remove sufficient bits to fit into the buffer; and

(e) means for adjusting an overall code rate so as to provide sufficient error correction capability, thereby providing a first rate in a first stage of puncturing and providing a second rate in a second stage of puncturing.

Claim 44 (canceled)

45. (currently amended): The system of claim 43 ~~claim 44,~~ further comprising:

(f) means for increasing non-punctured bits in one of the first stage and second stage of puncturing, and decreasing non-punctured bits in another of the first stage and second stage of puncturing, thereby adding additional puncturing to one stage and removing it from the other stage.

46. (currently amended): The system of claim 43 ~~claim 44~~ further comprising:

(f) means for increasing non-punctured bits in the first stage and decreasing non-punctured bits in the second stage.

47. (currently amended): The system of claim 43 ~~claim 44~~ further comprising:

(f) means for decreasing non-punctured bits in the first stage and increasing non-punctured bits in the second stage.

48. (currently amended): The system of claim 43 ~~claim 44~~ further comprising:

(f) means for interleaving parity bits before rate matching occurs; and

(g) means for subsequently de-interleaving the parity bits, thereby avoiding a need to periodically sample the parity bits when performing periodic sampling in rate matching, thereby mitigating the effect of the periodicity of the puncturing pattern.

49. (new): In a communications system employing a plurality of rate matching stages for processing a plurality of individual parity bit streams derived through puncturing a selected number of bits, wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, and the puncturing rates of the P1 and P2 bits are biased by adding a number of non-punctured P1 bits to the first group and decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group, the method including:

(a) determining a number of bits $\hat{N}$ using $\hat{N}=\left\lfloor \frac{4I}{7P}+\frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching; and

(b) if $\left|\frac{I}{(P/2)}-\frac{7\hat{N}}{2}\right|<1-\frac{\hat{N}}{2}+\left\lfloor\frac{\hat{N}}{2}\right\rfloor$, calculating the bias

$$\Delta=\left\lceil\max\left\{\frac{I}{\left\lfloor\frac{7\hat{N}-1}{2}\right\rfloor}-\frac{P}{2},\frac{P}{2}-\frac{I}{\left\lceil\frac{7\hat{N}+1}{2}\right\rceil}\right\}\right\rceil$$; and

(c) setting $\Delta=0$ if $\left|\frac{I}{(P/2)}-\frac{7\hat{N}}{2}\right|$ *is not* $<1-\frac{\hat{N}}{2}+\left\lfloor\frac{\hat{N}}{2}\right\rfloor$.

50. (new): The method of claim 49 wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

51. (new): The method of claim 50 wherein the non-puncturing patterns will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.

52. (new): A wireless communication system employing a plurality of rate matching stages for processing a plurality of individual parity bit streams derived through puncturing a selected number of bits, wherein degradations in the quality of punctured error correction coded transmissions having a first group of parity 1 (P1) bits and a second group of parity 2 (P2) bits are identified, and the puncturing rates of the P1 and P2 bits are biased by adding a number of non-punctured P1 bits to the first group and decreasing the number of non-punctured P2 bits in the second group by the number of non-punctured P1 bits added to the first group, the system including:

(a) means for determining a number of bits $\hat{N}$ using $\hat{N} = \left\lfloor \frac{4I}{7P} + \frac{1}{2} \right\rfloor$ wherein I is the number of bits at the input to each branch of rate matching and P is the total number of the P1 and P2 bits at the output of rate matching; and

(b) means for calculating the bias

$$\Delta = \left\lceil \max\left\{ \frac{I}{\left\lfloor \frac{7\hat{N}-1}{2} \right\rfloor} - \frac{P}{2}, \frac{P}{2} - \frac{I}{\left\lceil \frac{7\hat{N}+1}{2} \right\rceil} \right\} \right\rceil \text{ if } \left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right| < 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor ; \text{ and}$$

(c) means for setting $\Delta = 0$ if $\left| \frac{I}{(P/2)} - \frac{7\hat{N}}{2} \right|$ *is not* $< 1 - \frac{\hat{N}}{2} + \left\lfloor \frac{\hat{N}}{2} \right\rfloor$.

53. (new): The system of claim 52 wherein non-puncturing patterns with a period of $7\hat{N}/2$ cause degradation in performance results and $\hat{N}$ is a whole number.

54. (new): The system of claim 53 wherein the non-puncturing patterns will be employed whenever the average non-puncturing period of P1 or P2 bits is within ±1 or ±½ of $7\hat{N}/2$ for even and odd $\hat{N}$ respectively.